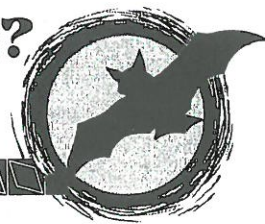


Who Turns Out the Lights on Halloween?



Cross out the letters above each correct answer. When you finish, write the remaining letters in the spaces at the bottom of the page.

In Exercises 1-4, solve the equation. Round your solution to two decimal places.

1 $\sin 22^\circ = \frac{x}{15}$

$x = 15 \sin(22^\circ) = 5.619$
5.62

2 $\tan 75^\circ = \frac{n}{80}$

$n = 80 \tan(75^\circ) = 298.56$

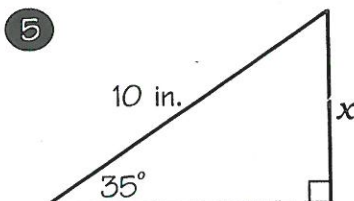
3 $\sin 48^\circ = \frac{7}{a}$

$a = \frac{7}{\sin(48^\circ)} = 9.42$

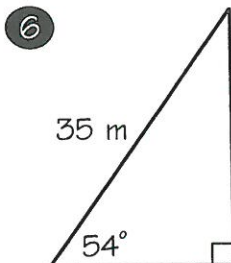
4 $\cos 6^\circ = \frac{92}{k}$

$k = \frac{92}{\cos(6^\circ)} = 92.51$

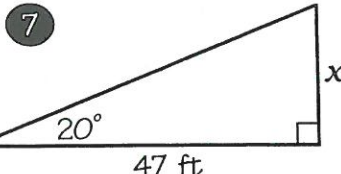
In Exercises 5-12, find the length of the side labeled x . Round to one decimal place.



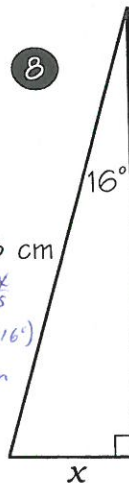
$\sin(35^\circ) = \frac{x}{10}$
 $x = 10 \sin(35^\circ) = 5.74 \text{ in}$
5.7 in



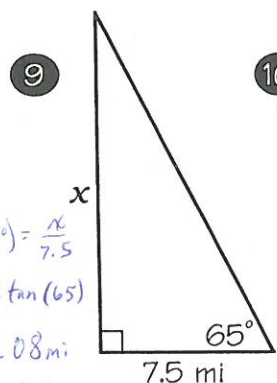
$\cos(54^\circ) = \frac{x}{35}$
 $x = 35 \cos(54^\circ) = 20.57 \text{ m}$
20.6 m



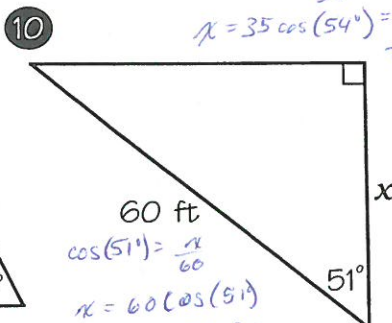
$\tan(20^\circ) = \frac{x}{47}$
 $x = 47 \tan(20^\circ) = 17.12 \text{ ft}$
17.1 ft



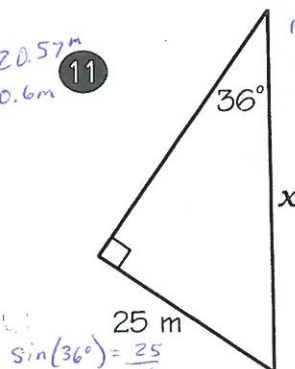
$\sin(16^\circ) = \frac{x}{18}$
 $x = 18 \sin(16^\circ) = 4.96 \text{ cm}$
5.0 cm



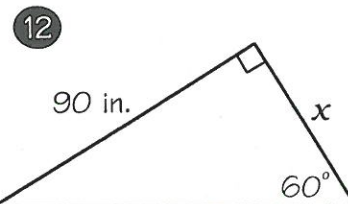
$\tan(65^\circ) = \frac{x}{7.5}$
 $x = 7.5 \tan(65^\circ) = 16.08 \text{ mi}$
16.1 mi



$\cos(51^\circ) = \frac{x}{60}$
 $x = 60 \cos(51^\circ) = 37.76 \text{ ft}$
37.8 ft



$\sin(36^\circ) = \frac{x}{25}$
 $x = 25 \sin(36^\circ) = 14.83 \text{ m}$
14.8 m



$\tan(60^\circ) = \frac{90}{x}$
 $x = \frac{90}{\tan(60^\circ)} = 51.96 \text{ in}$
52.0 in

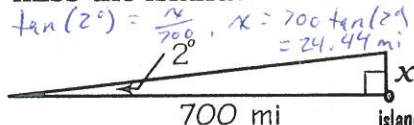
In Exercises 13-15, find the required length. Round to one decimal place.

- 13 When a 20-ft ladder is leaned against a wall, it makes a 72° angle with the ground. How high up on the wall does the ladder reach?



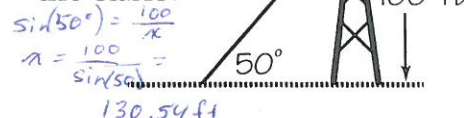
$\sin(72^\circ) = \frac{x}{20}$, $x = 20 \sin(72^\circ) = 19.02 \text{ ft}$

- 14 A ship is sailing toward a small island 700 mi away. If the ship is 2° off course, by how many miles will it miss the island?



$\tan(2^\circ) = \frac{x}{700}$, $x = 700 \tan(2^\circ) = 24.44 \text{ mi}$

- 15 A cable from the top of a 100-ft telephone tower makes a 50° angle with the ground. How long is the cable?



$\sin(50^\circ) = \frac{100}{x}$
 $x = \frac{100}{\sin(50^\circ)} = 130.54 \text{ ft}$

SO	TH	AC	AT	EB	EL	ME	AB	IG	ET	OO
42.5 m	22.5 ft	20.6 m	5.0 cm	130.5 ft	128.1 ft	92.51	19.0 ft	4.7 cm	16.1 mi	298.57
HT	OP	SW	AY	IN	QU	IT	UP	MU	CH	ON
55.4 in.	9.42	20.3 mi	24.4 mi	5.62	37.8 ft	38.1 m	17.1 ft	52.0 in.	95.32	5.7 in.

T H E L I G H T S W I T C H

Simplify each radical:

$$1) \sqrt{90}$$

$$\sqrt{9} \sqrt{10}$$

$$3\sqrt{10}$$

$$2) \sqrt{121}$$

$$\sqrt{11} \sqrt{11}$$

$$11$$

$$3) \sqrt{84}$$

$$\sqrt{12} \sqrt{7}$$

$$\sqrt{4} \sqrt{3}$$

$$2\sqrt{21}$$

Convert from radians to degrees, leaving your answer in exact form (not rounded):

$$2\pi \text{ rad} = 360^\circ$$

$$1 \text{ rad} = \frac{180^\circ}{\pi}$$

$$4) \frac{\pi}{4} \text{ rad}$$

$$5) \frac{3\pi}{4} \text{ rad}$$

$$6) 8 \text{ rad}$$

$$\frac{\pi}{4} \times \frac{180}{\pi} = 45^\circ$$

$$\frac{3\pi}{4} \times \frac{180}{\pi} = 135^\circ$$

$$8 \times \frac{180}{\pi} = \frac{1440}{\pi}^\circ$$

Convert from degrees to radians, leaving your answer in exact form (not rounded).

$$2\pi \text{ rad} = 360^\circ$$

$$\frac{\pi}{180} = 1^\circ$$

$$7) 30^\circ$$

$$8) 145^\circ$$

$$9) 100^\circ$$

$$\frac{\pi}{180} (30^\circ) = \frac{\pi}{6} \text{ rad}$$

$$\frac{\pi}{180} (145^\circ) = \frac{29\pi}{36} \text{ rad}$$

$$\frac{\pi}{180} (100^\circ) = \frac{5\pi}{9} \text{ rad}$$